Chad
Bellmon Analysis

USAID/Food for Peace
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Acronyms

CFAF	Communauté des Francs Afrique Franc (African Financial Community Currency)
CILSS	Comité Permanent Inter Etats de lutte contre la Sécheresse dans le Sahel (Permanent Inter State Committee against Drought in the Sahel)
EDST	Enquête Démographique et Santé au Tchad (Demographic and Health Survey in Chad)
EU	European Union
FEWSNET	Famine Early Warning Systems Network
FAO	Food and Agriculture Organization
FFP	Food for Peace
GOC	Government of Chad
IMF	International Monetary Fund
LIFDC	Low Income Food Deficit Country
MT	Metric Ton
PNSA	Programme Nationale pour la Sécurité Alimentaire (National Food Security Program)
ONDR	Organisation National pour le Développement Rurale (National Organization for Rural Development)
ONASA	Organisation National pour la Sécurité Alimentaire (National Food Security Organization)
RFFP	Regional Food for Peace
SODELAC	Société pour le Développement du Lac (Organization for the Development of the Lake)
SONACOT	Société Nationale de Commercialisation du Tchad (National Trading Company of Chad)
STAT	Société Tchadienne D'Affrètement et de Transit (Chadian Transit Society)
TMT	Thousand Metric Tons
UMR	Usual Marketing Requirement
USAID	United States Agency for International Development
WARDA	West Africa Rice Development Association now Africa Rice Center
WFP	World Food Program

Executive Summary

This analysis was undertaken to determine whether the distribution of PL 480 Title II commodities in Chad would result in a disincentive to domestic production or a disruption of the local market and whether adequate storage facilities would be available. A team of three Food for Peace staff traveled to Chad to conduct and write the report. Accordingly, the team collected statistics, visited local markets, interviewed merchants and met with relevant government ministries, international organizations, transportation companies, banks and other donors.

Chad suffers from chronic food insecurity, as demonstrated by the consistently high levels of stunting (41%), underweight (37%) and wasting (14%) for children under five. While the country does sometimes benefit from good harvests (ex: 2005/06 & 2006/07), on average, Chad's agricultural production does not meet the needs of its people. Consequently, commercial and concessional imports are required to fill the gap.

The three commodities chosen for this analysis are: rice, vegetable oil and wheat flour. As in many developing countries, and as was anticipated in the case of Chad, finding reliable statistics proved extremely difficult. Nonetheless, after examining production, consumption and importation levels, as well as assessing certain market realities in Chad, this analysis concludes that:

- Rice monetization is not recommended;
- A small vegetable oil monetization pilot test is recommended now; and
- A maximum of 15,000 MT of wheat flour monetization is recommended.

Concerning rice, while the data indicate that there is indeed a gap between what is consumed and what is produced and imported, monetization of rice is not recommended. This is largely due to political sensitivities surrounding rice, including the fact that the GOC is making investments in the rice sector, and ultimately pursuing self-sufficiency. There is a similar gap in the vegetable oil market, and the analysis reveals it can be filled by Title II without harming regular market conditions or the local production system. Nonetheless, this analysis first recommends the monetization of 1,000 MT vegetable oil as a pilot test. Contingent upon a successful pilot, close monitoring of the oil market and future availability of higher quality data, up to 5,000 MT of vegetable oil eventually could be programmed. Finally, up to 15,000 MT of wheat flour can be monetized. Between growing demand, absence of locally produced wheat flour and successful monetization programs for the past ten years, there appears to be no reason to believe this quantity would provide a disincentive to domestic production or distort the local market.

Adequate ports, storage and transportation exist for the recommended levels of commodity. It is recommended that Title II partners continue to use the port of Douala, Cameroon and the corridor through Ngaoundéré to Chad to transport shipments.

Purpose

All P.L. 480 Title II monetization and distributions programs must fulfill the Bellmon Amendment criteria, which hold that:

- ✓ The distribution of commodities in the recipient country will not result in a substantial disincentive or interference with domestic production or marketing in that country; and
- ✓ Adequate storage facilities are available in the recipient country at the time of exportation of the commodity to prevent the spoilage or waste of the commodity.

In addition, according to USAID's Monetization Field Manual, a successful monetization program should meet the objectives of:

- ✓ Generating the maximum income feasible for the sale of Title II commodities;
- ✓ Encouraging the development of competitive food marketing systems; and
- ✓ Enhancing household access to food.

This analysis is being undertaken to determine if these conditions are met in Chad.

Methodology

Given the complexity of monetization and food distribution in Chad, USAID felt that an internally conducted Bellmon Analysis would yield the most objective results. As such, this Bellmon Analysis was conducted and written by Marie Loustaunou, of FFP/W, Dramane Mariko and Mohamoud Osman, of RFFP/Dakar and Abdelwahid Yacoub, of FEWSNET/Chad. The team would like to thank Africare and the Embassy/N'Djamena for coordinating logistics.

The team traveled to Chad March 19 – April 2, and spent time in Abéché, Moundou and N'Djamena visiting local markets, meeting with merchants and collecting statistics. Additionally, and more specifically, the team met with and interviewed representatives from the Chamber of Commerce, the European Union (EU), the Financial Bank of Chad, the Food and Agriculture Organization (FAO), the Chadian Transit Society (STAT), and the World Food Program (WFP), as well as numerous government departments, including the Ministry of Agriculture, the National Organization for Rural Development (ONDR), the National Food Security Organization (ONASA), and the National Institute of Statistics. All the while, the team assessed the viability of programming three products: rice, vegetable oil and wheat flour.

Country Overview

Chad is a landlocked country, located in the middle of Africa with a total surface area of 1,284,000 km^2 of which 1,259,200 km^2 is land and 24,800 km^2 is water. In 2003, roughly 3.6 million hectares, which represent less than 20% of the arable surface area, were planted and 30,000 hectares were irrigated.[1]

In 2006, the total population was estimated at 8,743,000 inhabitants and the growth rate was estimated at 2.67%.[2] Therefore, the population in 2008 is estimated at 9,216,000. Please note that while there are other approximate growth rates, some as high as 3.2%, this is the official Government of Chad (GOC) figure, and the one used in this analysis. Of the total population, 75% live in rural areas and 80% live with less than $2 per day (below the poverty line). Chad is chronically food insecure, as demonstrated by the rates of stunting (41%), underweight (37%) and wasting (14%) for children under five.[3] Furthermore, the country experiences high rates of adult illiteracy (74%) and people without access to an improved water source (58%), as well as low life expectancy (44).[4] According to the 2006 UNDP Human Development Index, Chad ranks 171st out of 177 countries.

Chad has a post-independence history plagued by decades of civil warfare, invasions and rebellions. The government has a democratic constitution, although in June 2005, President Idriss Deby held a referendum successfully removing constitutional term limits. As a result, power remains in the hands of an ethnic minority. Also in 2005, new rebel groups emerged in western Sudan and have made probing attacks into eastern Chad.[5]

Chad began oilfield pipeline developments in 2000, and in 2003 completed a pipeline (financed in part by the World Bank) linking its southern oilfields to terminals on the Atlantic coast via neighboring Cameroon. Since then, Chad has been exporting oil from three oilfields near Doba, which produce up to 250,000 barrels a day, with annual government revenues of between $80 and $100 million.[6] In 2006, the World Bank and the Government of Chad signed a memorandum of understanding under which the Government of Chad committed 70% of its oil revenues to poverty reduction programs, and provided for long-term growth and opportunity by creating a stabilization fund. The government pledged to enhance transparency and accountability through support for the role of the Collège, Chad's independent oil revenue oversight authority.[7] If these terms and conditions are respected, the economic outlook for Chad is now better than ever.

[1] FAO, Food & Agriculture Indicators, http://www.fao.org/es/ess/compendium_2006/pdf/CHD_ESS_E.pdf
[2] Institut National de la Statique et des Etudes Economiques et Démographiques
[3] UNICEF, Chad Statistics, http://www.unicef.org/infobycountry/chad_statistics.html#23
[4] UNDP, Human Development Report 2006, http://hdr.undp.org/hdr2006/
[5] CIA, The World Fact Book Chad, https://www.cia.gov/cia/publications/factbook/geos/cd.html
[6] State Department, Chad Profile, http://www.state.gov/outofdate/bgn/c/35893.htm
[7] The World Bank, "World Bank Press Release No:2007/19/EXC", July 14, 2006

Agriculture Sector Overview

General Background

Chad's economy is heavily dependent on the agricultural and livestock sectors. These two sectors contribute more than 45% to Chad's Gross Domestic Product (GDP), support about 85% of the population and account for the bulk of the country's foreign earnings. Chad's agriculture structure is basically a rain fed subsistence food production system. The types of crops that can be grown and the distribution of livestock herds around the country are determined by the considerable variations in climate. The subsistence food production system is dominated by smallholders and the traditional farming practices are conducted, almost entirely, under rain-fed conditions with limited use of production enhancement inputs, such as fertilizers, irrigation, pesticides, and modern farm tools. Beyond the inherent weakness of the food production system, Chad's agro pastoral-based economy is generally handicapped by its landlocked position, lack of diversification, poor marketing infrastructure (ex: road network) and the continued political instability.

Agro Climatic Zones

Chad's climate has significant influence on its food production capacity as well as its economy. The type of food and the quantity produced is dictated by the three distinctive agro climatic zones, namely, the Saharan, the Sahelian and the Soudanian zones. The Saharan zone, with an annual rainfall of less than 300 mm, covers 47% of the total surface of the country but houses only 2% of the population. Most of the Saharan zone is desert and, therefore, has limited agricultural potential. However, date palm plantations and vegetable gardens are planted and livestock (mainly camels and goats) herding is practiced around oases and wadis (dry water ways flooded during rainy seasons).

Annual rainfall in the Sahelian zone ranges from 350 to 600 mm/year and most of it falls during July to September. It covers approximately 28% of the total surface of the country and is home to 51% of the population. The Sahelian economy is dominated by livestock herding and the production of coarse grains such as millet, sorghum and berebere with small quantities of rice, wheat and corn grown around Lake Chad and in the west (between the Chari and Logone rivers). Other important crops grown in the Sahelian zone include peanuts, pulses (ex: beans and cowpeas) and gum arabic. In addition, the Sahelian zone produces a variety of cash crops such as onions, garlic, okra, tomatoes, and melons. More importantly, the pastures of the Sahelian zone feed over 80% of the country's livestock which include cattle, sheep, goats, camels, horses, and donkeys. However, because of the scarcity and unreliability of rainfall, the Sahelian zone is highly susceptible to droughts. Therefore, the region is characterized by frequent failures of the food production system and high levels of household vulnerability to food insecurity.

The Soudanian zone is characterized by annual rainfall ranging from 800 to 1,200 mm, mostly falling between May and October. It represents 25% of Chad's total land surface and is home to 47% of the population. Because of its favorable climatic conditions, including higher rainfall, relatively lower temperatures, vapor-transpiration, and

relatively higher soil fertility, food production in the Soudanian zone is characterized by greater stability, diversification and crop yields. As a result, the Soudanian zone often has a food production surplus. Cotton, the country's most important export-oriented cash crop, is exclusively grown in this region. Other important crops grown in the Soudanian zone include cereals, such as sorghum, millet, rice, pulses and a wide variety of root crops, tubers and fruits. The recent discovery of oil further increases the region's growing economic importance and its significant contributions to the Chadian economy. However, Chad's poor marketing infrastructure limits full exploitation of the region's comparative advantage as a potential exporter of its food to the rest of the country.

Use of Essential Inputs

Lack of investment from the public or the private sector is the root cause of Chad's low agricultural productivity. Public services such as extension, research and diffusion of new farming techniques have long been in decline due to a lack of resources. Fertilizers are used only in the production of the few crops promoted or owned by the state such as cotton and sugar. Over 90% of the food production system relies on rainfall and family labor as the most important inputs. A production system such as Chad's, which depends almost entirely on the erratic Sahelian rainfall, is expected to fail more often than succeed in providing a sustainable food supply to a growing population.

Water for irrigation is among the most essential inputs required for the improvement and diversification of the food production system. Chad has both the land and the water resources to significantly increase its food production. With its surface and subterranean water reserves, Chad has the capacity to irrigate 1.2 to 5 million hectares of farmland.[8] However these figures must be looked at cautiously considering environmental factors that affect the size of Lake Chad and issues surrounding sharing water resources with bordering countries. Figures provided by CILSS (2006) estimate Chad's total irrigable land at 335,000 hectares with 200,000 hectares of the total located in the Sahelian zone and 135,000 hectares in the Soudanian zone. Despite its enormous potential, only a small fraction of available resources were used in 2002.

The use of modern irrigation, introduced by the French during the colonial period, had expanded, particularly in the south and around Lake Chad, and reached its highest peak after the 1973 drought. However, the system remains in ruins since its collapse during the civil war in the 1970s and 1980s. Only 30,273 hectares, which represents less than 10% of the land available for irrigation, were exploited in 2002 ((FAO –AQUASTAT). Of this total, only 12% was under modern irrigation as compared to 88% under the traditional system (i.e., *shadouf* or balance-based manual water lifting mechanism). Regions practicing this technology included the valley between the Chari and Logone Rivers (rice, vegetables), Lake Chad (wheat, corm, vegetables, etc.), Lake Fitri (recessional sorghum) the wadis of Kanem, Ouaddaï and Batha (recessional sorghum, onion, garlic, okra, tomatoes, etc.), and the oases of Borkou-Ennedi-Tibesti in the north (date palm plantations).

[8] AQUASTAT, « L'irrigation en Afrique en Chiffres-Enquête », 2005

Upland rice is grown as a mono-crop or as a mixture with other food crops following the slash-and-burn. Rain fed lowland (paddy rice) rice is cultivated following traditional systems almost without any application of chemical fertilizer or other ago-chemical input. In irrigated areas, support and inputs for farmers has been greatly reduced. Land preparation in rain fed lowland areas is done mostly manually, while animal traction is commonly used in the irrigated or inundated areas. Transplanting is the dominant method of crop establishment in lowland and irrigated systems and weeding is generally done manually. Farmers do not possess appropriate tools or equipment for the harvesting and threshing the rice. A number of improved rice varieties developed by the West African Rice Development Association (WARDA) have been released for cultivation. However, without the use of inputs (such as fertilizers, irrigation, crop husbandry, etc.), improved crop varieties usually do not perform better than the indigenous local varieties.

Food Production vs. Consumption

In general, coarse grains such as millet, sorghum and berebere, along with peanut oil, constitute the main staple foods for the majority of the Chadian population. In addition, rice and wheat-based products (ex: wheat flour, baked goods, spaghetti, macaroni, etc.) are consumed by most of the urban population. Rice is also grown as a cash crop or is consumed locally in rural areas in the south where the crop can be grown. As shown by the data in Table 1, Chad's cereal production in 2005/06 was 1,997,772 MT. The 2006/07 season, with a production of 1,991,122 MT[9], was equally good. Both years, Chad's cereal production exceeded the five year average (2001-2005) by about 61%. However, since the food production system is so heavily dependent on rainfall, the amount of food produced fluctuates significantly from year to year.

Table 1: 2006 Cereal Production (MT) Compared to 2005 and the 5 Year Average (2001-2005)

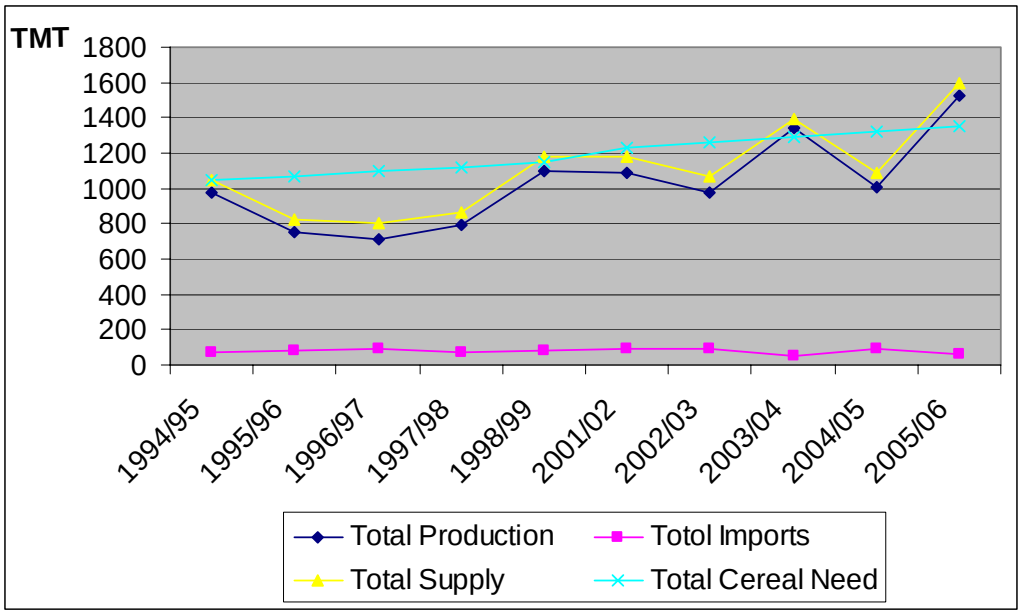
Year	Millet	Sorghum	Corn	Rice (Paddy)	Berbéré	Fonio	Wheat	Total
2005/06	564,672	553,265	184,637	148,000	543,595	-	3,603	1,997,772
2004/05	297,529	449,427	107,422	91,083	265,494	1,979	-	1,212,904
5 Year Average	365,546	476,754	95,812	111,455	185,184	1,327	2,628	1,238,706
2005/06 vs. 2004/05	90%	23%	72%	62%	105%	-	-	65%
2005/06 vs. 5 Year Average	54%	16%	93%	33%	194%	-	37%	61%

Source: DSA/DPA and CILSS/FAO/FEWSNET, October 2006

[9] Direction de la Production Agricole, Rapport du Tchad, Mars 2007

Based on a 2008 population estimate of 9.2 million and a per capita cereal consumption rate of 159 kg per year (MOA/CILSS), Chad's cereal needs in 2008 are estimated at 1,292,930 MT.[10] The country's annual cereal requirement is expected to closely follow the growth rate of its population which is estimated at about 2.67% per year. As the data presented in Graph 1 show, Chad's cereal production covers the demand in three years out of ten. According to WFP/Chad, Chad's cereal production used to satisfy the population's needs six years out of ten for the period 1990-2000.

Graph 1: Trends in Food Production, Importation and Consumption



With its erratic rainfall, continued decline of soil fertility, lack of essential inputs and increasing population, the number of food insecure Chadian households is expected to increase until appropriate mitigation techniques are introduced. Over 75% of the rural population lives under constant threat of food shortages (WFP, 2007) and more than 500,000 people per year are affected by chronic or temporary food insecurity (CCA, 2005). In addition, the nutritional situation of the country is marked by a low per capita daily caloric intake of 1,720 kcal compared with an average of 2,160 kcal and 2,480 kcal in Sub-Saharan Africa and developing countries, respectively.[11] The vulnerability assessment mission (VAM) conducted by WFP in 2007 in collaboration with specialized sectors of the Chadian public services (ex: DPA, CNNTA and CNAR), reported very high levels of malnutrition among children under 5-years of age. In the worst affected regions (Kanem, Guera, and Bahr Gazal of the Sahelian zone), acute malnutrition ranged from 13% to 14%.

[10] 159 kg x total population
[11] Programme National de Sécurité Alimentaire, Enquête Démographique et Santé au Tchad, 1997

Government of Chad's Agricultural Policy

The GOC's rural development strategy was presented to donors in Geneva in June 1999. The objective of this strategy is to increase production in a sustainable way that preserves the environment while reinforcing institutional and human capacities. The principal objectives of this strategy in order of priority and their ability to reduce poverty are:

1) Increasing agricultural production through (i) better delivery and access to agricultural inputs (e.g., extension and research services, credit, fertilizers, etc.); and (ii) improved basic rural infrastructure and marketing.

2) Providing support to rural organizations by strengthening the capacities of producer organizations and promoting the creation of new ones at the grassroots, district, and national levels with particular emphasis on women and herders.

3) Promoting sustainable management of natural resources and restoration of production potential.

4) Improving the effectiveness of the public sector.

5) Improving the provision of basic services.

In accordance with the UN Millennium Development Goals (MDGs), the ultimate goal of this strategy is to reduce the number of poor and food insecure people by half by 2015. To accomplish this, Chadian agricultural policy is focused on:

I. The cotton sub-sector reforms; and

II. The strengthening of the food security.

<u>Cotton Reforms</u>

In 2000, the GOC adopted a reform strategy to address the long-term economic and technical viability of cotton production in Chad. The key elements of this strategy were: (a) state disengagement from cotton production and privatization of CotonChad; (b) implementation of support measures to producer organizations; (c) improvement of the road network; and (d) enhancement of farm productivity. By the end of 2003, the GOC was expected to privatize CotonChad.

In 1999, the GOC set up a Cotton Sector Reform Committee known as the "Comité Technique de Reforme du Sous-secteur Coton" (CTRC), to evaluate the potential reform scenarios. The MOA established the technical support unit for cotton reform in 2000. The CTRC was primarily concerned with improving the incomes of cotton farmers through the liberalization of the sector and the promotion of strong cotton producer organizations (UNCTAD). It implemented a program to support the institutional development of producer organizations relating to cotton ginning.

Rural Development Policy and Strengthening Food Security

The rural development policy, in particular the reinforcement of food security, was reiterated through a series of the documents.

The Sectoral Consultation on the Rural Development[12] (CSDR)

The government policy presented in June 1999 through the CSDR was articulated through the following objectives:

- To ensure food self-sufficiency for all of the population and take advantage of the country's agricultural potential in order to produce surplus, develop export and to increase income for the producers;
- To increase agricultural production, in a sustainable way and increase incomes for producers; and
- To manage the ecosystem well, controlling water for the benefit of the population while promoting the development of agriculture, livestock, and fishing.

National Strategy for Poverty Reduction[13] (SNRP)

The SNRP integrates the CSDR approved in June 1999, which was implemented by the Rural Development Support Program (PIDR), through two projects:

- The Local Development Support Project[14] (PROADEL), which aims to create decentralized communities responsible for their own development;
- The Program for the Strengthening of the Sectoral Capacities[15] (PROSE) which is designed to assist professional organizations involved in agricultural production and to private and public services providers in the rural sector.

The positive impact of the pilot program carried out under the framework of the Special Program of Food Security[16] (PSSA) led to the preparation and implementation of the National Food Security Program (PNSA) approved in May 2005 by the GOC and the donor community. The PNSA takes into account the different GOC directives and strategies for rural development and is one part of the National Poverty Reduction Strategy, which was approved by the High Interdepartmental Committee in June 2004.

The Agricultural Directing design[17] (SDA)

[12] La Consultation Sectorielle sur le Développement Rural (CSDR)
[13] La Stratégie Nationale de Réduction de la Pauvreté (SNRP)
[14] Programme d'Appui au Développement Local
[15] Programme de Renforcement des Capacités Sectorielles
[16] The Special Programme for Food Security **(**SPFS) is FAO's flagship initiative for reaching the goal of halving the number of hungry in the world by 2015.
[17] Schema Directeur Agricole (SDA)

The economic liberalization undertaken by the GOC during these last years within the framework of the structural adjustment program (ex: devaluation of CFAF, tax and custom reforms in the UDEAC countries, suppression of importation licenses, privatization, etc.) provided solutions to some of the bottlenecks leading to improved economic growth. However the causes of these problems persist and will continue to slow down the economic growth if adequate complementary measures are not adopted.

The privatization of the National Cereal Office and the installation of the National Food Security Stock (ONASA) did not allow a regulation of the cereal market. This market is characterized by a high fluctuation of cereal prices. More often, cereal prices reach such low levels during the harvest period that farmers do not even recover their cost of production. Thus, sometimes during the hungry season the GOC is forced to intervene by conducting subsidized cereal sales to alleviate the impact of high cereal prices on poor households. The delay in the privatization of CotonChad has led to the financial difficulties that this company has today. The low prices paid to the cotton producers, and more importantly, the delay of payment of cotton revenue to the producers has made these farmers access to cereals particularly difficult.

Food Aid Programs

Chad is one of the largest food aid recipient countries in the Sahel. From 1970 to 2002, it received 25,700 MT of food aid annually[18] and since the Darfur conflict began in 2003, this amount has only increased. For example, Chad received 64,826 MT of food aid in 2005-2006 (Table 2). Approximately 77% of the 2005-2006 food aid was used for the humanitarian operations (i.e. assistance to the refugees and internally displaced people) in Chad and only 23%, including 8% in monetization, was used for development activities. Of the total food aid received in 2005-2006, 43% was whole wheat or wheat flour.

The monetization of commodities, which was conducted by Africare, included 4,000 MT of Title II wheat flour and 1,000 MT of parboiled rice. In addition to the wheat flour monetized by Africare, the European Union distributed 1,777 MT of wheat flour to the refugees. Only 2.4% (1,569 MT) of this food aid was rice, of which 1,000 MT was monetized. Around 2,713 MT (4.2%) of vegetable oil was also distributed. The USG was the major food aid donor providing a total of 34,303 MT to Chad in 2005/2006. Its contribution—69% of which was used for emergency activities—represented 53% of the total food aid donated to Chad in 2005-2006. The other largest food aid donors were Holland (10%), the European Union (8.26%), WFP (5.85%) and France (5.29%). Based on this information, that is to say the large quantity of food aid already programmed in Chad, the analysis concludes that a small increase in distribution commodities, under Title II, would not significantly disrupt local production or the market.

[18] http://faostat.fao.org/site/485/default.aspx

Table 2: Food Aid (MT) Chad received in 2005/2006						
Donors	Development		Emergency		Total	
	Total	%	Total	%	Total	%
Canada	0	0.00	960	100.00	960	1.48
Denmark	339	97.41	9	2.59	348	0.54
Egypt	0	0.00	90	100.00	90	0.14
EU	0	0.00	5355	100.00	5355	8.26
France	957	27.91	2472	72.09	3429	5.29
Germany	1495	100.00	0	0.00	1495	2.31
Hungary	0	0.00	74	100.00	74	0.11
WFP	0	0.00	3791	100.00	3791	5.85
Ireland	0	0.00	24	100.00	24	0.04
Italia	946	100.00	0	0.00	946	1.46
Japan	43	2.88	1452	97.12	1495	2.31
Holland	0	0.00	6554	100.00	6554	10.11
Norway	495	100.00	0	0.00	495	0.76
Spain	0	0.00	165	100.00	165	0.25
Sweden	0	0.00	2566	100.00	2566	3.96
USA	10704	31.20	23599	68.80	34303	52.92
Others	17	0.62	2719	99.38	2736	4.22
Total	14996	23.133	49830	76.87	64826	100.00
Source: WFP/INTERFAIS						

As noted before, three commodities were chosen for the purpose of this analysis: rice, vegetable oil and wheat flour. Both rice and wheat flour have been imported commercially and monetized (through USAID and wheat through USDA) in the past. Vegetable Oil, while imported and distributed through WFP, has never been monetized.

Table 3: Commodity Summary

Consumed Locally	Produced Locally	Imported	Monetized
Corn	X	X	
Millet	X		
Rice	X	X	X
Sorghum	X		
Vegetable Oil	X	X	
Wheat	X	X	X

Disincentive Effects for PL 480 Rice

Production

Rice is produced in Chad under three different production systems, based on the water source and the level of water flow control. They are: (1) full controlled irrigation or irrigated rice; (2) rain fed upland rice; and (3) rain fed lowland rice.

In 2006/2007, a total of 80,839 hectares of rice were planted and harvested, compared to 110,000 hectares in 2005/2006. The 2006/2007 rice production was estimated at 112,000 MT (gross production) which was 28 % below the 2005/2006 production level and 2 % below the five year average. The distribution of the surface area cultivated in 2006/2007 by region is summarized in Table 3. Currently, rain fed lowland rice production accounts for more than 85 % of the total rice production in Chad, and irrigated rice represents less than 5 %. This means that both yield as well as production of rice in Chad will fluctuate from year to year as a result of changes in rainfall. For example, as the data below show, in 2006/2007, rice yields varied from 0.776 MT/ha in the non irrigated Salamat region to 3.5 MT/ha in the irrigated Chari-Baguirmi region.

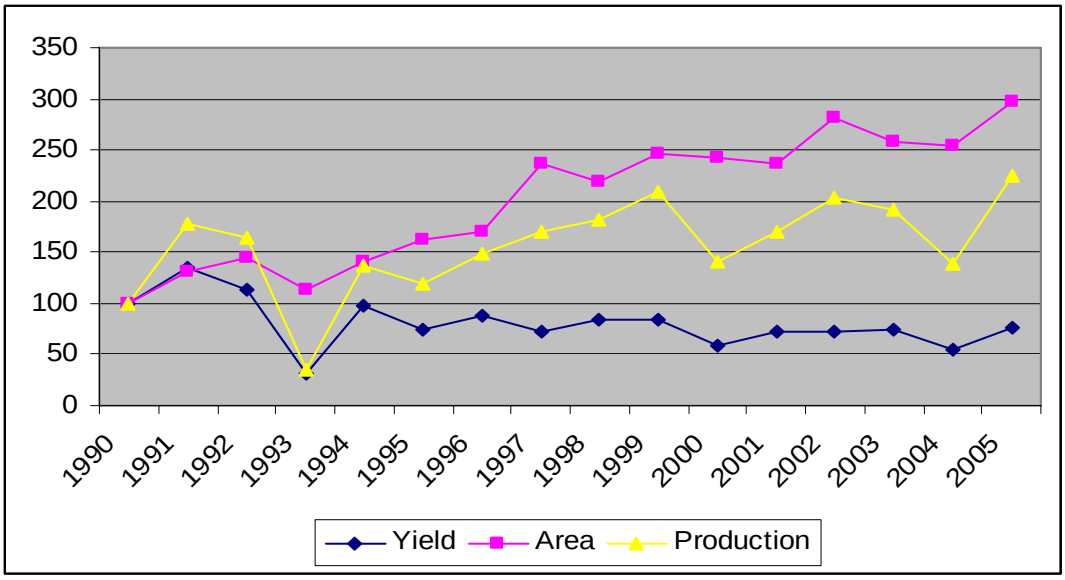
Table 4: 2006/2007 Rice Area, Yield and Production

Préfecture	Area (ha)	Yield (kg/ha)	Production (MT)
Batha	-	-	-
BET	-	-	-
Biltine	-	-	-
Chari-Baguirmi	900	3,500	3,150
Guéra	276	1,200	331
Kanem	-	-	-
Lac	-	-	-
Ouaddaï	-	-	-
Salamat	7,579	766	5,806
Sahel Sub-Region	**8,755**	**-**	**9,287**
Mayo Kebbi	26,664	1,500	39,996
Tandjilé	26,148	1,200	31,378
Logone Occidental	7,288	1,825	13,301
Logone Oriental	9,128	1,100	10,041
Moyen Chari	2,856	900	2,570
Sudan Sub-Region	**72,084**	**-**	**97,285**
Total Chad	**80,839**	**-**	**106,572**

Source: Chad DSA/DPA

Using FAOSTAT time series data from 1990-2005, the annual growth rate[19] of Chadian rice production is estimated at 4.4%[20]. However, it is important to note that this growth is attributable to expansion of the cultivated area rather than any technical improvements of the rice production system in Chad. During that same period, the annual growth rate of the area under rice cultivation area is estimated at 6.8%[21], while the rice yield shows a negative trend of -2.4%[22] per year. The graph below (Graph 2) illustrates this point. Whereas the area cultivated was three times greater in 2005 than 1990, rice production only increased by a factor of roughly 2.25 because rice yield decreased by 25%. This reemphasizes that it is the lack of access to essential inputs, such as fertilizers, irrigation, and farming equipment, rather than access to land that significantly limits the productivity of the Chadian rice farmers.

Graph 2: Trend of Rice Area, Production and Yield



Source: FAOSTAT database – Chad Rice 1990-2005

Traditionally in Chad, rice is grown as a cash crop cultivated by smallholders (less than 1 hectare per household) in the southern regions. The dramatic increase in rice production since 1996 is one impact of the CFAF devaluation, which made local rice less expensive than imported rice and, as a result, more competitive on the local market. Otherwise stated, rice production in Chad positively responded to the rise in prices following the CFAF devaluation. In some areas of southern Chad, the traditional recession sorghum production area has been reduced in favor of rice production because of the sustained relative profitability of rice compared to sorghum. This demonstrates that rice supply tends to be elastic in Chad.

[19] These average growth rates were calculated by the least-squares regression method. The least squares growth rate, r, is estimated by fitting a least squares trend regression line to the logarithmic annual value of the variable in the relevant period. The regression equation is of the form: $\log X_t = a + b_t + e$ or $X_t = (1+r)^t$.

[20] $Y = 0.04x + 4.21$ $R2 = 23\%$

[21] $Y = 0.0618x + 3.70$ $R2 = 86\%$

[22] $Y = -0.021x + 7.41$ $R2 = 11\%$

Increasing domestic rice production to satisfy the growing rice consumption and reduce imports has been a top priority of the GOC. It initiated a rice production development program with the support of the Taiwanese Government, which was designed to reclaim 2,500 hectares of land for rice production. Only 1,000 hectares of this target have been reclaimed with the use of fully controlled irrigation. For political reasons, the Taiwanese left Chad without completing the work and the Government of China is expected to take over the program. However, the Chinese Government has not made any investment yet.

With technical support from the FAO, the GOC drafted its National Food Security Program (PNSA) for 2006-2015. With regard to rice, the PNSA plans to construct multiple rice production perimeters of 20 to 30 hectares each for a total area of 420 hectares. Also 250 smaller perimeters of 3 to 5 hectares each are planned. Under this framework, the GOC plans to bring Vietnamese farmers to the rice production villages. They will work with the Chadian agriculturalists to improve rice production[23].

Given the relative competitiveness of domestic rice since the devaluation of the CFAF, numerous private initiatives to develop rice production and processing around N'Djamena and some southern towns can be observed. Unfortunately, it proved too difficult to quantify the total surface area covered by these initiatives. Other private sector involvement in rice includes the fact that some rice processors from Cameroon and Nigeria allegedly buy Chadian rice during the harvest period when prices are the lowest. This rice is processed and packaged in Nigeria or in Cameroon and re-exported to Chad during the hungry season as premium rice from Asia.

As shown in Table 5, rice is planted from June through September and harvested from November through January. Rice prices are the lowest during the harvest period when markets are flooded. Therefore, rice monetization should be avoided during this period.

Table 5: Local Rice Cropping Cycles and Optimal time for monetization

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*
Rain fed rice							Sowing				Harvesting		
Irrigated rice								Sowing				Harvesting	
Monetization					Appropriate monetization time								

Source: From information provided by FEWSNET/Chad

[23] Launched by FAO in November 1996 to allow less-developed countries to benefit from the experience and expertise of more advanced developing countries in the framework of the Special Programme for Food Security (SPFS), the South-South Cooperation scheme is intended to provide a new impetus for cooperation between developing countries participating in the SPFS. FAO launched in 1994 the SFFP in order to improve national food security in low-income food-deficit countries (LIFDCs) through the rapid improvement of agricultural production and productivity and access to food.

Consumption

Rice is not a typical Chadian dish. However, in recent years, the consumption of rice has increased significantly, particularly in urban areas. According to WARDA (West Africa Rice Development Association now Africa Rice Center), rice consumption across West Africa has been steadily growing at an annual rate of 6% since 1973. In Chad, it is estimated that more than 90% of rice sold is consumed in urban areas and the rate of urbanization is 3.8% per year.[24] Consequently, rice consumption in Chad is expected to continue to increase.

Over the past five years, the average quantity of commercially imported rice was officially estimated at 11,500 MT, and food aid imports at an average of 1,000 MT. However, all rice importers interviewed agreed that, despite good harvests, rice importation in Chad has been closer to 50,000 MT per year for the last couple of years. Due to the porous nature of the Chadian border, it is difficult to control rice importation from Nigeria and Cameroon. Many importers buy rice at the ports of Douala and Lagos, transport it to Kousseri (Cameroon) and illegally import it to N'Djamena in small trucks. Several important rice importers estimated the quantity of black market rice coming to N'Djamena through Kousseri at 3,000 sacks (50 kg) per day.

According to official data (1990-2006) from the Ministry of Agriculture, the per capita rice consumption rate in Chad is 10.5 kg per year. But taking into account the more realistic importation figure, we estimate the per capita rice consumption rate at 13 kg per year in Chad. This is one of the lowest consumption rates of rice in the Sahel. The national per capita rice consumption rate is 76 kg in Senegal, 50 kg in Mali, 24 kg Niger, and 15-20 kg in Burkina Faso. Using the 13 kg per capita and the projected population for 2008, the rice demand is expected to be 120,000 MT in 2007/2008. Around 50% of this quantity will come from local rice production (64,000 MT) and imports will supply the remaining 50%.

Market Conditions

Domestic rice availability tends to be seasonal in Chad and concentrated in the southern production zones. As of March 2007, in N'Djamena, the rice market was dominated by rice imported from Asia (ex: China, India, Pakistan, Vietnam, Thailand and India). In the N'Djamena grain market, USDA long grain rice monetized in Cameroon and Title II parboiled rice monetized in Chad by Africare were found in relatively small quantities. In Abéché, which is located more than 1,200 km from the rice production zones, there appeared to be little if any Chadian rice on the market. Instead, most of the rice found was imported from Libya, Cameroon and Nigeria. During visits to Abéché and Moundou markets, the team did not observe or hear of any person trading American rice. Therefore, it appears that American rice is rarely traded or consumed outside N'Djamena.

24 "The Urban Challenge in Africa: Growth and Management of its Large Cities", http://www.unu.edu/unupress/unupbooks/uu26ue/uu26ue0b.htm

Rice quality has become a very important issue among consumers in most West African countries, including Chad. Consumers have shown preference for imported rice, because of the low price and quality (not broken). Rice processing in Chad like in the other Sahelian countries is constrained by inadequate and inefficient rice processing equipment at the farm or village level. This leads to the production of poor quality and substandard rice that is not competitive with imported rice. [25]

The market structure for imported rice in Chad can be divided into a three-tier system. The first tier includes the major rice importers, of which there are no more than five. Most of them are based in N'Djamena and they buy rice ex-tackle from the ports of Douala and Lagos. Others import rice from Libya and supply the eastern and northern regions of the country through Abéché. These importers specialize in food importation (rice, wheat flour, sugar, vegetable oil), and rice is just one of these products.

The second tier comprises the wholesalers who buy rice from the importers in N'Djamena and sell it to the third tier of smaller retailers. These middle men are spread throughout the country mainly in big towns. In general they represent a specific importer and they are loyal to that importer who supplies them rice. Payments to the importer are made in cash and credit. These rice wholesalers buy between 100 to 300 MT per month.

The third tier is made up of retailers, who buy small lots of rice (10 to 100 sacks) from the wholesalers. This tier is in close contact with consumers who buy rice per sack (50 or 100 kg). Some of these retailers also sell rice to women petty traders who use a local measurement ("coro") to sell their rice to consumers who cannot afford to buy a sack.

Table 6: Price of Rice (in CFAF per "coro")

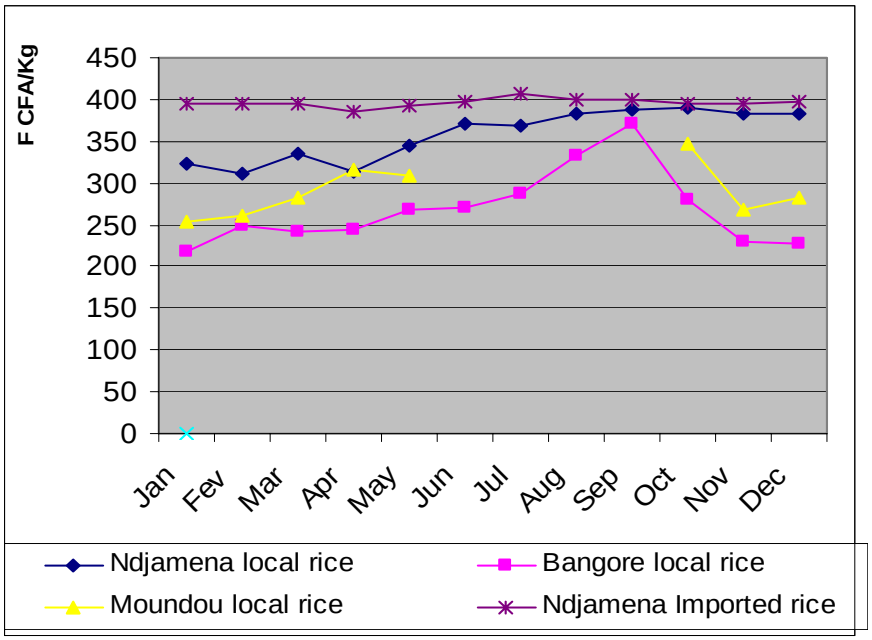
Type of rice	Tier 1 (Importer)	Tier 2 (Wholesaler)	Tier 3 (Retailer)	Small Retailer
Local rice	-	150 -200	250	300
Imported rice	320	330	340	400

As data presented in Graph 3 show, imported rice prices tend to be stable throughout the year in the N'Djamena market. The domestic rice price, however, fluctuates widely reaching its lowest points during the harvest (November-January) and its highest point just before the next harvest (August-October) in the production zones. During the hungry season (July-September), the price difference between local and imported rice is not significant. Local rice is, therefore, no longer competitive with imported rice due to the higher quality of the latter. In the production zones (Bangor and Moundou), the domestic rice price starts decreasing as soon as the first rice harvested reaches the market, while in N'Djamena, one observes the local rice price decreasing in January. In addition, the price of local rice on the N'Djamena markets starts to rise gradually in May until it reaches the same level as the imported rice price in August. This indicates that local rice is highly competitive (at least in N'Djamena) with imported rice during July-December.

[25] USDA, http://www.fas.usda.gov/gainfiles/200702/146280215.pdf

In other words, local rice becomes less competitive during the harvest period mainly as a result of over supply.

Graph 3: CY 2005 Local and Imported Rice Price Trend in Chad



Source: SIM/FEWSNET Chad

In 2006 and 2007, Africare monetized a small quantity of Title II parboiled rice in Chad. No negative impact of this program was noticed on local rice production. This is probably due to the fact that shipments were as small as they were (two of 500 MT each) and also the fact that parboiled rice is considered premium rice in Chad.

UMR and Recommended Monetization Levels

Table 7: Rice Balance Sheet (TMTs)

	2002/03	2003/04	2004/05	2005/06	2006/07	Average
Production	60.7	69.3	50.1	81.7	61.6	64.7
Imports	18.0	15.0	19.4	15.3	15.6	16.7
Commercial	18.0	15.0	15.0	14.3	14.6	15.4
Concessional	0.0	0.0	4.4	1.0	1.0	1.3
Total	78.7	84.3	69.5	97.0	77.2	81.3

Source: CILSS/AGRHYMET

Table 8: Rice Usual Marketing Requirement (UMR)

Factors	Quantities	Notes
Population	9.2	2008 estimate, millions
Per Capita Consumption	13	Kg estimate
Consumption Needs	119.6	TMT
Sock Changes	0	
Total	*119.6*	TMT
Rice Production	64.7	TMT 5 year average
Import Requirements	54.9	Total needs - production
Imports		
Commercial	15.4	TMT 5 year average
Concessional	1.3	TMT 5 year average
Total	*16.7*	TMT
Maximum US Programming	**38.3**	Import requirements - imports

Source: CILSS/AGRHYMET

Using the CILSS/AGRYMET data provided by the Ministry of Agriculture, the levels of production, importation and consumption detailed in Table 5 and Table 6 are calculated. The Maximum US programming, which is the difference between the import requirements and the imports, is estimated at about 38,300 MT. However, considering the questionable quality of rice import data and, more importantly, the different programs undertaken by the GOC and its partners to develop and increase rice production in Chad, monetization of US rice is not recommended at this time.

Disincentive Effects for PL 480 Vegetable Oil

Production

Chadian edible oil consumption requirements are met by domestic production of cottonseed and peanut oil, as well as small amounts of sesame and shea nut (karité) oil.

Cottonseed Oil

The cotton belt in Chad lies in the Southern part of the country. Most cotton farms are still family-owned and operated by households with an average of 5 to 6 people. The average farm size is one to two hectares. In 2000, the total cottonseed production was estimated at 143,000 MT compared to 207,500 MT in 2005.[26]

The Chadian cotton industry exhibits a structure of vertical integration, dominated by CotonChad, a majority state-owned company that also has a private shareholder, Compagnie Française de Développement Textile (CFDT), which manages much of the company under contract. CotonChad has the exclusive legal right to buy unprocessed Chadian cottonseed from producers, mostly poor small-farmers. It is also a vertically integrated monopsony that gins and then markets the processed cotton lint through its own network. CotonChad buys at a fixed price before the growing season, offering an effective price guarantee as well as fertilizer and pesticide on credit.[27] Nine ginning factories are active in the South of the country (Sarh, Koumra, Moundou, Kelo, Gounou-Gaya, Léré, Pala, and Kyabé). In addition, the GOC has established the capacity to process cottonseed by installing mills for the production of oil and soap. The oil and soap marketing segments of CotonChad were reorganized in 2003 as part of a broader reform agenda under the auspices of the IMF. Accordingly, cottonseed processing activities (oil and soap production) were separated from cotton ginning operations and privatized, essentially abandoning the structure of vertical integration.[28] However, due to management problems, the GOC regained ownership of the cottonseed oil factory, which is now managed by CotonChad.

Located in Moundou, the cottonseed oil factory has a theoretical production capacity of 40,000 MT of refined vegetable oil. However, it never reaches its full capacity. According to FAOSTAT reports, Chad's five year average annual cottonseed oil production is estimated at 15,700 MT. The factory reached its maximum production in 1999 and 2002 with 20,700 MT per year. In 2003, its production was 13,000 MT. The Chadian cottonseed oil production annual growth is estimated at 4.7%[29], although it has shown a decreasing trend since 2000 (Graph 3).

[26] Tchad: Données de base, source administration
[27] Chad Poverty Assessment: Constraints to Rural Development, October 1997
[28] http://www.unctad.org/infocomm/anglais/cotton/sitemap.htm
[29] Y = 0.047x + 3.70 R2 =38%

Peanut Oil

Peanuts have become an important food crop in Chad. It represents around 15% of the total area cultivated in Chad. Peanuts are eaten roasted or dry, and their oil is used to cook. Peanuts are cultivated in both the Soudanian and the Sahelian zones. Production of peanuts has been more stable than that of any other major crop, staying in the range of 353,927 MT to 385,103 MT from 1999/2000 through 2004/2005. Peanut yields vary from 800 to 1,000 kg per hectare.

Although considerable efforts were made to commercialize peanut production, most failed. Through the 1960s and 1970s, about 97% of the annual crop went to local consumption. What remained was sold to various edible oil manufacturing enterprises, none of which succeeded. For example, a Chinese-built peanut oil mill in Abéché, completed in 1969, was never put to use. Local farmers sold surplus peanuts through traditional channels, rather than to the state monopoly set up in 1965, the National Trading Company of Chad (Société Nationale de Commercialisation du Tchad-SONACOT). This parastatal company bought local produce for sale abroad or domestically to state-run commercial operations. In 1979, SONACOT disappeared and the only commercial sales of peanuts were then limited to CotonChad purchases in the south, but by 1987 these had been halted to reduce costs.[30]

Peanut oil production is dominated by small-scale artisanal enterprises in Chad. There is no peanut refining factory in Chad. CotonChad tested the market by purchasing peanuts and processing them in 2005. However, this experience was not positive. Today there is a proliferation of small-scale artisanal enterprises engaged in peanut oil production in peanut production zones as well as in the major towns of the country. In Abéché, there are at least 30 peanut oil processing machines, most of which belong to women cooperatives.

The peanut oil processing machines have different origins (India, China, Malaysia etc.) and capacity. An average size machine from China costs 4 - 5 million CFAF ($8,000-$10,000) and its processing capacity is 3 to 3.6 tons of peanut seed or 1,040 - 1,248 liters[31] oil per day. Apparently, this oil sub-sector seems to be more competitive than the cottonseed and imported oil. The producer sales price for peanut oil is 120,000 CFAF per barrel (208 liters) compared to 125,000 CFAF for a barrel of cottonseed oil in Moundou (a cottonseed and peanut production area). In N'Djamena, the cottonseed oil semi wholesaler sells barrels at 137,800 CFAF. And the retail price of peanut oil is 650 CFAF/liter in Moundou and 750 CFA/liter in N'Djamena. In Abéché, the producer price of the peanut oil is 170,000 CFAF/barrel or 800 – 825 CFAF/liter. There, the cost of 100 kg of peanuts is 20,000 - 25,000 CFAF compared to 17,000 - 18,000 CFAF in Moundou. Finally, the imported palm oil from Malaysia sells at 16,500 CFAF/20 liters in N'Djamena.

[30] www.country-studies.com/chad/subsistence-farming.html
[31] 6 sacks of peanut seed produce 200 liters of oil

The Chadian consumers' prefer the taste of peanut oil. They buy cottonseed oil only if they cannot find peanut oil on the market at an affordable price. During the rainy season, when there is no peanut oil on the market, the price of vegetable oil increases up to 1,000 CFAF/liter in N'Djamena and Abéché and 800-900 CFAF/liter in Moundou. Upper class consumers in N'Djamena prefer imported vegetable oil on account of the higher quality (more on this topic later).

Cotton and peanut are rain fed crops in Chad, which means that they are planted and harvested in May/June and November/December, respectively. As a result, the cottonseed oil factory generally starts processing in February and ends in May when the rainy season begins. Oil products are sold progressively throughout the year. However, due to the fact that this oil is less competitive than peanut oil, part of this refined cottonseed oil is stored and sold during the rainy season (June – November) when there is a shortage on the Chadian market. The peanut harvest is in December and the first peanuts reach the market in January. Peanut oil extraction starts immediately and is sold between February and May. After this period, the availability of peanut oil on the market is very limited. The market is mainly supplied by limited quantities of stored cottonseed oil and imported oil from countries such as Malaysia, Cameroon and Nigeria. The retail price of vegetable oil reaches its highest level (1,000 CFA/liter) during this period. Previously, in the eastern and northern regions of the country, vegetable oil was supplied from Sudan to fill the gap. However, due to the conflict in Darfur, the supply has been dramatically reduced over the last few years.

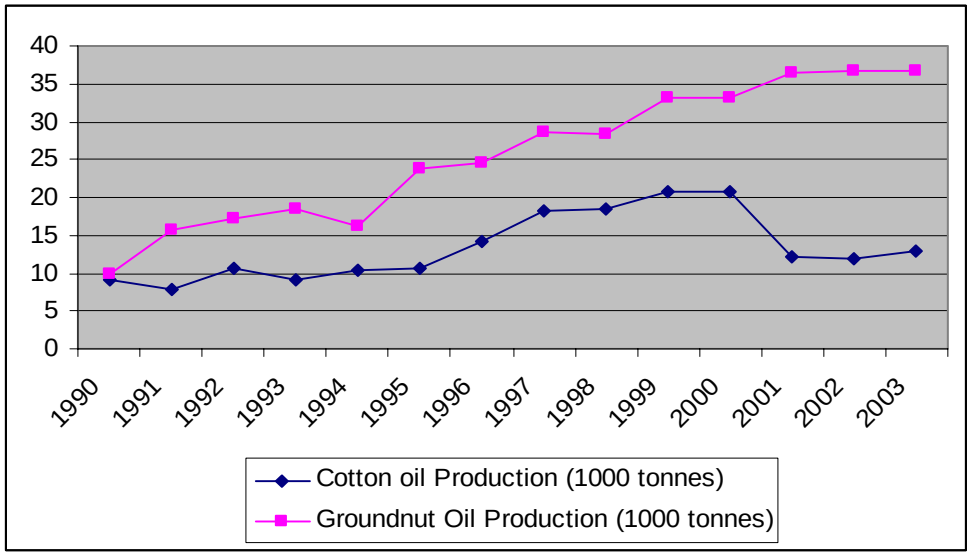
As demonstrated in Table 9, the rainy season seems to be the most appropriate period for Title II vegetable oil monetization in Chad. This monetization will not affect the regular domestic vegetable oil production or distribution systems. Instead, Title II vegetable oil imports will improve the accessibility of edible oil by a large population of Chad who cannot afford to buy vegetable oil during the rainy season.

Table 9: Domestic Vegetable Oil Production and Sale Period vs. Optimal time for Title II oil monetization

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*
Cottonseed oil		Processing/Sale						Sale					
Peanut oil		Processing/Sale											
Monetization							Appropriate monetization time						

To protect its own vegetable oil industry, the GOC has imposed 66% import tax on vegetable oil. The peanut oil industry has taken advantage of this protection measure. Its annual growth rate (9%)[32] is one of the highest growth rates in the whole agricultural sector. In spite of this high growth, the domestic oil production does not cover the population's need. There is shortfall of vegetable oil on the market during the rainy season which explains the increase in vegetable oil prices during this period in Chad.

Graph 4: Trend in cottonseed and Peanut Oil production in Chad



Source: FAOSTAT – 1990 -2003 Production data

Consumption

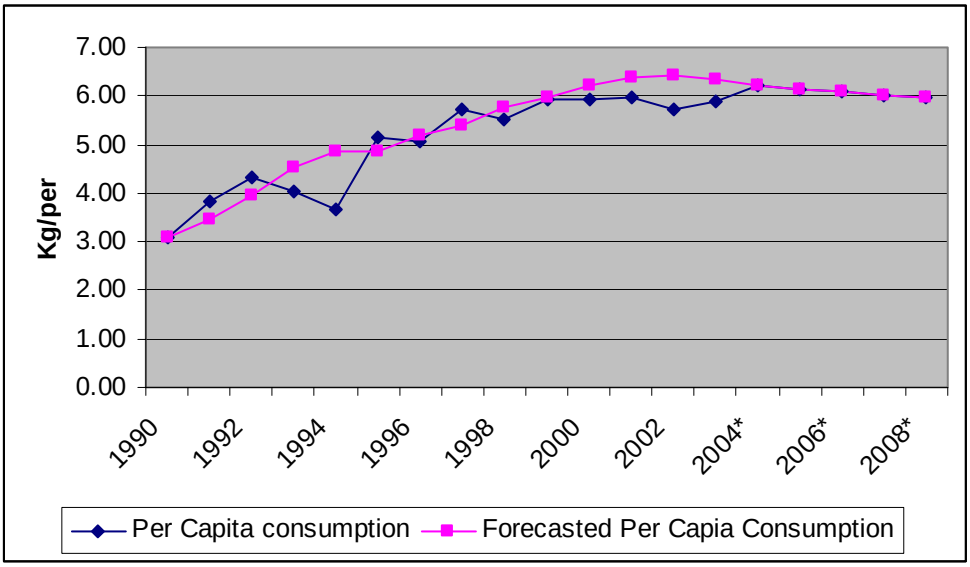
We estimate demand by multiplying the per capita consumption norm by the projected population. However, oil consumption requirements have been difficult to calculate in light of the fact that demand for vegetable oil is highly price elastic. On the one hand, the government protection measures have favored the peanut oil producers, but on the other, they have negatively impacted consumers. The net benefit of consumers has been reduced over the time. Using the FAOSTAT data from 1990-2003, the average per capita oil consumption in Chad is around 6 kg. This is the lowest rate in the entire Sahel region. The per capita oil consumption is 20 kg in Senegal and 10 kg in Mali and Mauritania. The FAO/WFP recommended per capita oil consumption requirement is 1 kg per month or 12 kg per year (Eritrea Bellmon Analysis 2004). In Chad, WFP's recommended vegetable oil ration for refugees is 20 grams per person per day or 9.1 kg per year.

The data presented in Graph 5 explain the relationship between the GOC restrictions on vegetable oil imports and the impact of this on vegetable oil consumption in Chad. The per capita oil consumption in Chad has shown a downward trend since 2002. Holding other factors constant, the projected FY2008 per capita consumption is below 6 kg.

[32] Y = 0.09x + 3.70 R2 =90%

However, without any government distortion, the per capita vegetable oil consumption estimate in Chad is more realistically 8 kg per year. Using the projected population of 9.2 million, the potential demand of vegetable oil in 2008 is therefore roughly 73,600 MT.

Graph 5: Trend in Current and Forecasted Per Capita Oil Consumption in Chad



Source: FAOSTAT (1990-2003) * Data forecasted from FAOSTAT 1990-2003.

There are a number of important points to note with respect to consumer preference. First, consumers served by the markets of Abéché and Moundou exhibit a strong preference for peanut oil. This is largely due to the fact that peanut oil is the most affordable, but also because the populations are accustomed to the taste. Even IDP groups receiving rations from WFP, including donated American vegetable oil, prefer locally produced peanut oil. In fact, some of this vegetable oil ends up on the local market to be sold and/or exchanged for peanut oil. Numerous persons interviewed in Abéché, Moundou and N'Djamena cited the "fishy" smell that many Chadians believe characterizes the Title II vegetable oil donated by the USG to WFP in eastern Chad.

In contrast, wealthy consumers in N'Djamena strongly favor imported vegetable oil due to concerns about unhygienic and unsanitary conditions under which cotton and peanut oils are produced. Most of these urban consumers choose imported vegetable oil because they believe it is of the highest quality. Fortunately for these consumers, they can afford a clean, healthy alternative to cotton and peanut oils. But the vast majority of Chadian consumers regularly eat peanut oil and, to a lesser extent (because it is more expensive and the taste is less popular), cotton oil. Anxiety about the possible harmful effects of unsanitary edible oil on public health, such as childhood sickness, has led UNICEF and WHO to design a study of the quality of food products in Chad, including cotton and peanut oil. The study is planned to start in September 2007 and final results are expected roughly one year later.

Market Conditions

The edible oil market in Chad has the same structure as that of rice and wheat flour: wholesalers, semi-wholesalers and retailers. CotonChad sells only to wholesalers who take possession of the oil at the mill gate. Cottonseed oil is sold in 208 liter barrels or in 20 liter containers. The wholesalers sell small quantities of oil in barrels directly to semi-wholesalers. The retail system for vegetable oil is made up of numerous traders in both urban and rural areas.

Peanut oil, like cottonseed oil, is sold in 208 liter barrels or in 20 liter containers. This oil is directly sold to semi-wholesalers who sell to retailers. In general, this market segment is dominated by women. Other oil types were present on the markets in N'Djamena, Moundou and Abéché, such as palm oil from Malaysia and limited amounts of corn oil from Libya. Vegetable oils from Nigeria and Cameroon apparently arrive during the rainy season. In general, the profit margins for oil distributors are between 5% and 10%.

UMR and Recommended Monetization Levels

Table 10: Vegetable Oil Balance Sheet (TMTs)

	2001/02	2002/03	2003/04	2004/05*	2005/06*	Average
Production	57.3	51.1	50.8	51.6	53.4	52.8
Imports	1.9	0.1	0.2	3.0	2.3	1.5
Commercial	1.3	0.0	0.0	0.3	0.3	0.4
Concessional	0.6	0.1	0.2	2.7	2.0	1.1
Total	59.2	51.2	51.0	54.6	55.7	54.3

Source: FAOSTAT (2001/02 – 2003/04)
* Forecasted from FAOSTAT

Table 11: Vegetable Usual Marketing Requirement (UMR)

Factors	Quantities	Notes
Population	9.2	2008 estimate, millions
Per Capita Consumption	8	Kg estimate
Consumption Needs	73.6	TMT
Sock Changes	0	
Total	*73.6*	TMT
Oil Production	52.8	TMT 5 year average
Import Requirements	20.8	Total needs – production
Imports		
Commercial	0.4	TMT 5 year average
Concessional	1.1	TMT 5 year average
Total	*1.5*	TMT
Maximum US Programming	**19.3**	Import requirements – imports

Source: FAOSTAT (2001/02 – 2003/04)

Table 12: Monetization Decision Matrix

Commodity	20% Maximum US Programming	10% Previous Year's Commercial Imports	50% 5 Year Average Deficit	Average
Vegetable Oil	3,852	30	10,380	**4,754**

There is a lack of reliable data for vegetable oil production and consumption. Nevertheless, 2004/05 and 2005/2006 information was projected from the FAOSTAT 2001/02 - 2003/04 data using the exponential smoothing (Holt-Winters No Seasonal) from the Eviews software. Based on these estimates, this analysis predicts that 2008 vegetable oil consumption will be 73,600 MT. Average commercial imports are low (400 MT) because of the high government import tax (66%). Even with the relatively high level of food aid imports (1,100 MT) programmed by WFP, there is still a large gap: the Maximum US programming is calculated at 19,300 MT. However, based on a more conservative methodology proposed in the Monetization Field Manuel, not more than 5,000 MT of Title II vegetable oil are recommended for monetization in Chad (Table 12). Furthermore, considering the GOC policy to protect the domestic cottonseed oil industry and the questionable quality of cottonseed and peanut oil data, this analysis recommends a 1,000 MT pilot monetization of vegetable oil before monetizing a larger quantity.

Disincentive Effects for PL 480 Wheat Flour

Production

Chad currently produces wheat on a small scale. Farmers grow it in polders around the shores of Lake Chad, and some also plant small amounts in the oases of northern Chad. Despite modest efforts to increase production, Chad's wheat output will remain relatively low. The Organization for the Development of the Lake (SODELAC) was founded in 1967 to organize wheat production and, at the time, provide wheat to the state-owned flour mill, the "Grand Moulin du Tchad". But the mill closed in 1980 and has remained closed ever since. In addition, plans in the late 1970s to cultivate some 20,000 hectares of wheat failed because warfare around Lake Chad, which negatively impacted the infrastructure of SODELAC and the construction of new polders. Generally, wheat production in Chad followed trends similar to the production of other cereals: remaining low in the 1960s and 1970s, reaching a peak in 1983, and falling sharply in 1984.[33] For the moment, there are no public or private initiatives designed to substantially increase wheat production, and no plans to resurrect the flour mill.

The average five year domestic wheat production is estimated at roughly 2,120 MT (gross production). This production is locally consumed in the production zone, and normally does not reach the national wheat flour market. It is not surprising therefore, that during the same period, Chad officially imported an average of 39,900 MT of wheat flour of which 5,100 MT was in the form of food aid. In addition, the wheat flour importers consulted believe that, similar to rice imports, the real quantity is even higher. They estimate that more than 60,000 MT of wheat flour is imported to Chad each year, and that about 20-30% is brought into the country illegally (not included in official data). Either way, the domestic wheat flour production represents less than 3% of the country's total annual consumption.

The wheat flour market is dominated by European wheat flour (Belgian, French, Italian and German). For example, the French, through the "Société Générale des Affaires," supply more than 50% of the wheat flour market in Chad. This is probably due to their competitive prices. In addition, a significant quantity of wheat flour is coming from Nigeria, Cameroon, Sudan and Libya. However, estimating this quantity is difficult because these imports are often not officially recognized or recorded. Given this availability of subsidized, cheap wheat flour from Europe and neighboring countries, it seems that Chad does not have a comparative advantage in producing wheat flour itself. And Chad will continue to rely on the international market for its supply of wheat flour. While there is a need for a deeper analysis of Chad's wheat production potential, it is unlikely that PL 480 Title II wheat flour monetization likely will have any negative impact on domestic production in the near future.

[33] http://www.photius.com/countries/chad/economy/chad_economy_wheat.html

Consumption

Wheat flour is used in Chad to prepare bread, commonly French baguette, in urban areas. It is consumed for breakfast, especially among the middle and high income brackets of the urban population, and sometimes at noon and evening meals with sauce. Increasingly, baguette is also becoming part of the regular diet in many rural areas, where artisanal bakeries are developing quickly. According to most bakers, European wheat flour (soft wheat) is the preferred ingredient, over the American wheat, which is considered hard wheat and inappropriate for baguette preparation. If used at all, American wheat flour is mixed with the European wheat flour to produce a baguette acceptable to consumers. Conversely, American wheat flour is preferred for "beignets" (small donuts), because it uses less oil and becomes fluffy quickly, which attracts customers. Prepared and sold by women at roadside stalls as a hot meal, this wheat flour recipe is becoming popular in rural areas, especially during the weekly market. More and more, "beignet" consumption is growing in towns and villages throughout Chad, and is particularly high during the hungry season.

As data presented in Table 13 show, there is a significant negative correlation (-0.72*) between the wheat flour importation and the total cereal production in Chad. In other words, a decrease in the country's total cereal production leads to an increase in wheat flour imports. About 52% (0.72^2 *100) of the wheat flour importation variation can be explained by the total cereal production fluctuation in Chad.

Table 13: Correlation between Cereal Production and Imports

	Available Production	Per capita rate	Wheat import	Rice import
Available Production	1.00	0.85*	-0.72*	-0.31
Per capita Consumption Rate	0.85*	1.00	-0.67*	-0.29
Wheat import	-0.72*	-0.67*	1.00	0.42
Rice import	-0.31	-0.29	0.42	1.00

** The correlation is significant at 1% level

* The correlation is significant at 5% level

Demand for wheat flour in Chad is a function of its own price, but also of the price of other cereals (millet, sorghum, and "beriberi"). For example, in the case of a drought that causes an increase in domestic coarse grain prices, one observes a substitution of sorghum or millet flour for cheap wheat flour to prepare the traditional "boule". However, the consumer taste and preference favors local sorghum/millet flour over imported wheat flour as an ingredient to prepare the boule.

From official MOA/CILSS data (1990-2006), the average per capita wheat flour consumption rate in Chad is 7 kg per year. In 2003, FAO estimated the average per capita wheat flour consumption rate at 7.54 kg, which seems to be more realistic. Therefore, 8 kg per capita per year seems to be a reasonable estimate for 2008. It accounts for consumer income growth, urbanization, consumer taste and preference and

the unpredictable nature of agricultural production in Chad. Using the 2008 projected population of 9.2 million, the wheat flour demand is estimated about 73,600 MT. To further illustrate the debatable nature of importation statistics, the FAOSTAT time series data (2000-2005) forecast wheat flour imports at 85,000 MT in 2007/2008 with an annual increase of 5,000 MT.

Table 14: Chad Wheat Flour Importation Forecast (000 MT)

Year	Importation	Importation forecast*
2000	44.94	44.94
2001	51.52	49.97
2002	52.23	54.99
2003	60.02	60.02
2004	39.46	65.05
2005	72.00	70.07
2006		75.10
2007		80.13
2008		85.15

Source: FAOSTAT
* Forecasted by authors using the exponential smoothing technique

Market Conditions

As explained above, wheat is not produced in significant quantity in Chad. Furthermore, because there are no wheat milling facilities in the country, the little quantity of wheat that is grown locally is not transformed into flour. Rather, it is used to produce porridge for household consumption. Chad therefore relies on commercial imports and donated flour to satisfy its demand for wheat flour products.

At the time the team was in Chad, no American wheat flour existed on the market. However, merchants in N'Djamena and Moundou are familiar with this wheat flour. According to them, it is appreciated by women who make "beignets" because it inflates well when cooked and does not require much vegetable oil, compared to other flours. Essentially, the American wheat flour yields higher profits in the beignet business. In contrast, American wheat flour is not known in the eastern and northern regions of Chad (i.e., Abéché).

Similar to rice, the wheat flour market is divided into three tiers: importers, wholesalers, and retailers. And wheat flour is just one of the many food products imported or sold by these merchants, including rice, sugar, tea, and oil. Africare estimates that there are two international flour importers, approximately five to ten wholesale flour merchants and a total of 12 wholesale traders involved in flour commerce in N'Djamena. Of those, a few are committed to purchasing French flour, which offers advantages that Title II cannot: 1) they can purchase it on credit for up to nine months; and 2) they are guaranteed a regular delivery schedule. Therefore, these merchants choose to not openly buy American flour,

because it could endanger their agreements with the French flour distributors. About 45 bakeries are registered in N'Djamena, each major city also has many of it own, and the number of artisanal bakeries is quickly growing at the village level. In the markets, women use a traditional measure ("coro") to sell wheat flour to individuals. Their profit margin is between 20-30%. This margin is between 6-8% for wholesalers and retailers.

Table 15: Wheat flour Prices according to origins and market (CFAF/sack)

Wheat Flour Origin	Importer	Semi or wholesaler	Retailer (per sack)	Retailer (coro*)
American	-	-	-	-
French	16000	17000- 17500	18000-19000	1000/coro
Nigeria	-	-	16000	1000/coro
Sudan	-	-	21000	1000/coro
Turkey	-	-		1000/coro

*Local measure used in Chad to sell cereal (1 coro = 2.5 kg)

French wheat flour seems to regulate the wheat flour price in Chad. According to the SGDA general director, the French flour price is higher this year due to the bad wheat harvest in Europe. The importer price was 16,000 CFAF ($32) per sack in March 2007, and the government tax on cereals (including wheat flour) is 26,000 CFAF ($52) per MT.

In N'Djamena, the semi wholesalers sell the French flour sack at 17,000 CFAF ($34), while the retail price is 18,000 CFAF ($36). In Moundou the retail price is 17,500 CFAF and in Abéché, the price is 19,000 CFAF. This price includes the cost of transportation from N'Djamena to Abéché, which is estimated at 2,500 CFAF ($5) per sack. The Sudanese wheat flour only found in Abéché was 21,000 CFAF per sack.

Although there was no Title II wheat flour on the market when the team was in Chad, according to the RFFP/Senegal database, Africare has sold it in N'Djamena for between 14,000 and 14,500 CFAF per 50 kg sack. Therefore, since the semi wholesaler price of wheat is 15,000 CFAF ($30), according to merchants who have sold American flour, Africare monetized the Title II wheat flour at the fair market price. This conclusion was confirmed by the wheat flour merchants, who reported that there was no price difference between the Title II wheat flour and the French flour.

History of Title II Wheat Flour Monetization

Africare was the first PVO to introduce American wheat flour onto the Chadian market as food aid in 1997. Since then, Africare has monetized roughly 5,000 MT of American wheat flour annually under its Title II Development Assistance Program (DAP). Over the course of these ten years, Africare has created a market niche for this wheat flour. The demand is increasing, and as long as it exists on the market for "beignet" vendors, it will be favored over others. While some importers complain that other flours cannot compete in the "beignet" market, American flour cannot compete in the baguette market.

To date, all Africare flour shipments have been sold to one wholesaler who distributes them to semi-wholesalers and then retailers. Although sometimes it has been forced to, Africare generally does not store its wheat flour. Rather, it negotiates monetization sales contracts with clients before the flour shipment arrival. Africare's sale conditions are:

- Payment of 50% of the contract value at the signature of the sales contract;
- Payment of 25% of the contract value when the shipment arrives in Ngoundéré; and
- Payment of the remaining 25% when the shipment arrives in N'Djamena.

In the past, many wholesalers could not satisfy these conditions and therefore did not have access to the American wheat flour. Based on conversations with officials at the Chamber of Commerce and the Financial Bank of Chad, as well as interviews with numerous merchants in the imports/exports business, this analysis concludes that there are other potential wholesale buyers in the market. Furthermore, there is an even greater number of semi-wholesalers who might be interested in small lot sales. While Africare did not have a good experience monetizing with this methodology in the past, it remains an available option, and one that could potentially develop the wheat flour market further.

UMR and Recommended Monetization Levels

Table 16: Wheat Balance Sheet (TMTs)

	2002/03	2003/04	2004/05	2005/06	2006/07	Average
Production	4.0	2.9	0.0	3.6	1.9	2.5
Equivalent Flour	3.4	2.5	0.0	3.1	1.6	2.1
Imports	68.4	25.0	45.9	30.0	30.0	39.9
Commercial	57.0	25.0	35.0	30.0	27.0	34.8
Concessional	11.4	0.0	10.9	0.0	3.0	5.1
Total	71.8	27.5	45.9	33.1	31.6	42.0

Source: CILSS/AGRHYMET

Table 17: Wheat Usual Marketing Requirement (UMR)

Factors	Quantities	Notes
Population	9.2	2008 estimate, millions
Per Capita Consumption	8	Kg estimate
Consumption Needs	73.6	TMT
Sock Changes	0	
Total	*73.6*	TMT
Rice Production	2.1	TMT 5 year average
Import Requirements	71.5	Total needs - production
Imports		
Commercial	34.8	TMT 5 year average
Concessional	5.1	TMT 5 year average
Total	*39.9*	TMT
Maximum US Programming	**31.6**	Import requirements - imports

Source: CILSS/AGRHYMET

Table 18: Monetization Decision Matrix

Commodity	20% Maximum US Programming	10% Previous Year's Commercial Imports	50% 5 Year Average Deficit	Average
Wheat	6,324	2,700	35,740	**14,921**

Over the past five years, wheat flour production has averaged 2,100 MT and imports have averaged 39,900 MT. As a result, the five-year average domestic supply is 42,000 MT. Consumption in 2008 is predicted to be 71,380 MT, which means that up to 31,600 MT of wheat flour could be programmed in 2008. However, some reports reviewed estimate much higher importation levels in 2008. For example, according to FAOSTAT data from 2000 to 2005, 85,000 MT of wheat flour could be imported in Chad in 2008. With that in mind, this analysis submits a more conservative maximum programming MT from the Monetization Decision Matrix (Table 17): 15,000 MT of wheat flour can be monetized. This amount represents more than 10% of official commercial imports in 2006, but significantly less than half of the five year average deficit. Most importantly, the team believes it will not create a disincentive to domestic production or distort local markets.

Ports, Transportation & Storage

Overall, transportation capacity and storage facilities appear to be adequate for these recommended levels of PL 480 Title II commodities. Commercially, the large majority (approximately 90%) of goods destined for Chad arrive from Cameroon via the port of Douala. And Africare has used this corridor to ship Title II monetization commodities for the past 10 years. Douala port facilities have 58,000 square meters of bonded warehouses, 380,000 square meters of container storage area, 200,000 square meters of general cargo storage area and 8,000 square meters of cold storage. Roughly one year ago, it was privately contracted to MERSK, and hence is perceived to be well protected.

Goods are transported by train to Ngaoundéré and by truck from there to their final destination in Chad, usually N'Djamena. From Douala to N'Djamena it takes at best 20 days and as long as 40 days for goods to arrive. Considering that the climate in Douala and parts of Cameroon is humid and that some of the Title II commodities under consideration are sensitive to this (ex: wheat flour), necessary precautions should be taken such that the food does not spoil in transit. This did become an issue for one Africare shipment that was delayed in Cameroon for longer than anticipated or planned.

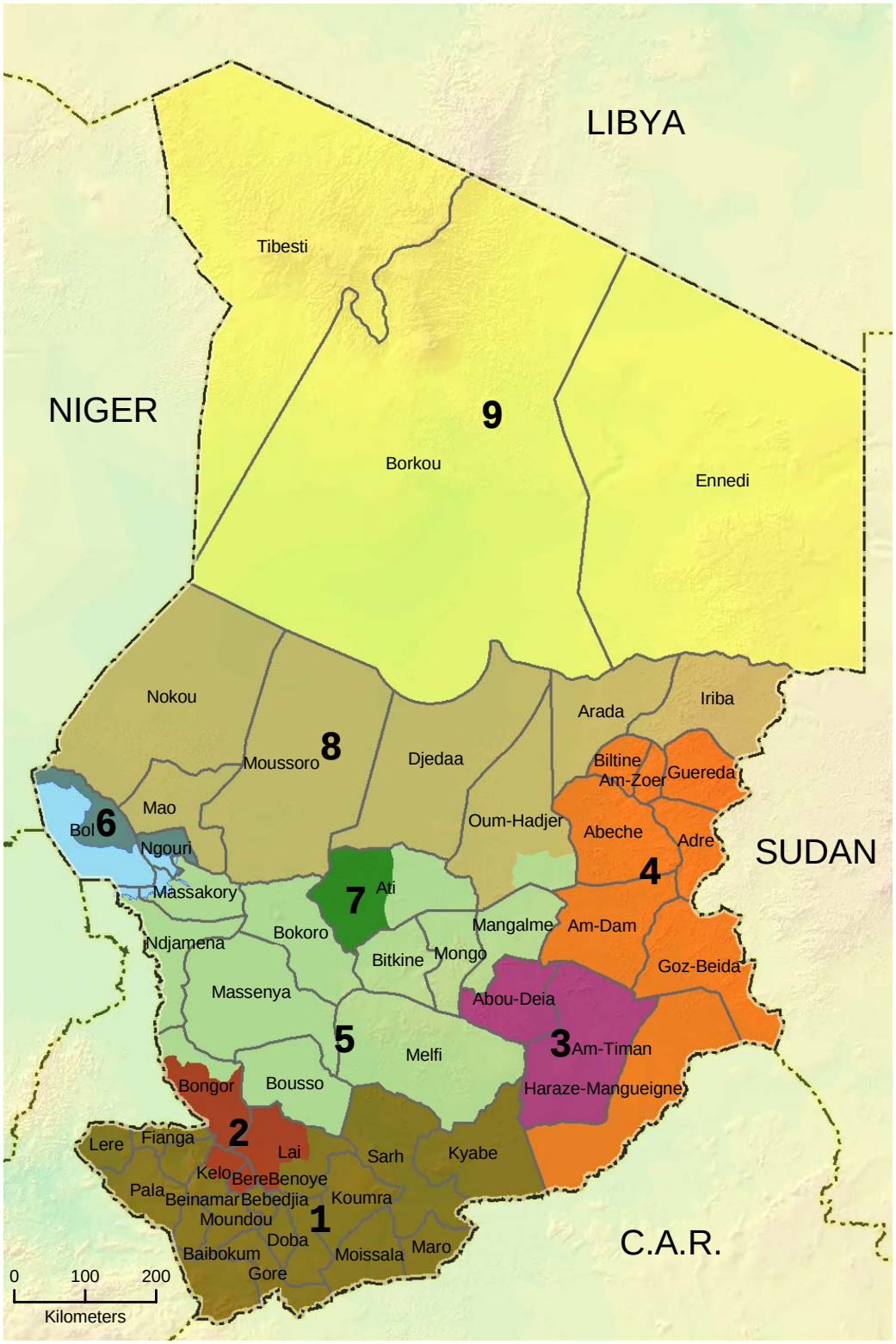
Table 19: Transportation Costs

Route	Rate (CFAF/MT)	Rate ($/MT)
Douala to Ngaoundéré	45,000	90
Ngaoundéré to N'Djamena	40,000	80
Ngaoundéré to Moundou	40,000	80
Douala to N'Djamena	95,000	190

A smaller share of goods does arrive from Nigeria, via the port of Lagos and, in addition, the Chamber of Commerce announced the possibility of developing a new corridor through Benin, via Cotonou. Finally, WFP commodities destined for refugees and IDPs in eastern Chad were previously shipped through the Libyan corridor. For the time being, though, the most favorable route for FFP commodities seems to be through Cameroon.

Warehouse fees in N'Djamena are high. Africare's experience to date has demonstrated some of the issues associated with that. For example, one shipment arrived and the buyer refused it due to quality standards. Africare was forced to store the commodities and pay the cost until the lot was sold in small increments to different buyers. Learning from this, for direct distribution commodities and for small lot sales of monetization commodities, intended to develop the market, the cost of storage should be factored into the budget. Also, please note that the National Office for Food Security (ONASA) has extended informal offers to help with storage, perhaps considered part of the GOC contribution. Currently, it has the capacity to store 25,000 MT and plans to build warehouse space for up to 40,000 MT in N'Djamena.

Map of Chad: Livelihood Zones



Source: FEWSNET

Legends

International
Prefectures
Sous-prefectures

International
Prefectures
Sous-prefectures

District
International
Province

District
International
Province

Zones d'economie alimentaire

1 Zone du Sud de Culture de Rente Coton et Arachide
2 Zone du Sud de Culture de Rente Riz
3 Zone du Sud-Est de Culture de Décrue
4 Zone de l'Est de Culture Pluviale Cérialière
5 Zone de l'Ouest Agropastorale
6 Zone Centrale Agro-Pêche-Elevage
7 Zone Centrale de Culture de Décrue et Pêche
8 Zone du Nord d'Elevage Transhumant
9 Zone du Nord d'Elevage Camelin, Dattes et Sel (Natron)

Food Economy Zones

1 Southern cotton and groundnuts cash crop zone
2 Southern rice cash crop zone
3 Southeast flood-retreat cultivation zone
4 Eastern rain-fed cereals zone
5 Western agro-pastoral zone
6 Central agro-pastoral and fishing zone
7 Central flood-retreat cultivation and fishing zone
8 Northern transhumant herding zone
9 Northern camel, date and salt (natron) zone

Zones d'economie alimentaire

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